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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,163	04/23/2001	Yoshio Oowaki	HITA.0050	4876

7590 02/12/2003

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EXAMINER

SHAPIRO, LEONID

ART UNIT	PAPER NUMBER
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2673

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/839,163

Applicant(s)

OOWAKI ET AL.

Examiner

Leonid Shapiro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

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Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The disclosure is objected to because of the following informalities: On pages 24, 26 next to the items 262 and 264 numerals 1 and 2 shown in parenthesis, which are absent in Fig. 5. Also on page 24, Line 13 shown item M, which is absent in Fig. 5.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6 rejected under 35 U.S.C. 103(a) as being unpatentable over Takahara et al. (JP No. 04-168417).

As to claim 1, Takahara et al. teaches a liquid crystal display device with : a liquid crystal display element; a plurality of driving circuits (See Fig. 7, items 60, 70, in Detailed explanation of the invention See Page 3, Lines 4-20); a display control device transmitting display data including an ineffective datum (auxiliary terminals, in which other ends are opened) to the plurality of driving circuits (See Fig. 2, items 21,25-26 in Applications examples See Page

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8, Line 13 to page 9, Line 14); an effective display datum (to connected terminals) being transmitted prior to the ineffective display datum (auxiliary terminals, in which other ends are opened) (See Fig. 1, items 1,1', 4-6, 1-m, n-1, n, in Means for solving the problem See Page 7, Lines 5 to page 8, Line 10).

So, Takahara et al. teaches to ignore the datum level for open pins. Since criticality of transmitting a datum having any level was not shown by the applicant, it would have been obvious to one of ordinary skill in the art at the time of invention to use any (including the same) level for transmitting ineffective datum in Takahara et al. apparatus even when the output bit number of a driver IC is larger than the circuit number of the divided electrode groups. (See in Detailed explanation of the invention Page 2, Lines 2-3).

As to claim 2, Takahara et al. teaches a liquid crystal display device with : a liquid crystal display element; a plurality of driving circuits (See Fig. 7, items 60, 70, in Detailed explanation of the invention See Page 3, Lines 4-20); a display control device transmitting display data including an ineffective datum (auxiliary terminals, in which other ends are opened) to the plurality of driving circuits (See Fig. 2, items 21,25-26 in Applications examples See Page 8, Line 13 to page 9, Line 14); an effective display datum (to connected terminals) being transmitted subsequently to the ineffective display datum (auxiliary terminals, in which other ends are opened) (See Fig. 1, 7-8, items 1,1', 4-6, 1-m, n-1, n, 60, in Means for solving the problem See Page 7, Lines 5 to Page 8, Line 10 and in Conventional techniques See Page 5, Lines 9--25).

So, Takahara et al. teaches to ignore the datum level for open pins. Since criticality of transmitting a datum having any level was not shown by the applicant, it would have been

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obvious to one of ordinary skill in the art at the time of invention to use any (including the same) level for transmitting ineffective datum in Takahara et al. apparatus even when the output bit number of a driver IC is larger than the circuit number of the divided electrode groups. (See in Detailed explanation of the invention Page 2, Lines 2-3).

As to claims 3-4, Takahara et al. teaches a liquid crystal display device with : a liquid crystal display element; a plurality of driving circuits (See Fig. 7, items 60, 70, in Detailed explanation of the invention See Page 3, Lines 4-20); a display control device transmitting display data for odd (even) numbered ones of the plurality of driving circuits and display data for even (odd) numbered ones alternately (See Fig. 4,7, items 21, ST1-ST12, 92, in Operation See Page 10, Lines 4-25); wherein the display control device transmits a datum having the same level as that of effective display datum for the odd (even) numbered one of the plurality of driving circuits being transmitted prior to the ineffective display datum (auxiliary terminals, in which other ends are opened) (See Fig. 4-5,7, items 21, ST1-ST12, 92, in Operation See Page 11, Lines 1-25).

So, Takahara et al. teaches to ignore the datum level for open pins (skip pins 161-162 by using ST1-ST12 start pulses). Since criticality of transmitting a datum having any level was not shown by the applicant, it would have been obvious to one of ordinary skill in the art at the time of invention to use any (including the same) level for transmitting ineffective datum in Takahara et al. apparatus even when the output bit number of a driver IC is larger than the circuit number of the divided electrode groups. (See in Detailed explanation of the invention Page 2, Lines 2-3).

As to claims 5-6, Takahara et al. teaches the at least one of odd (even) numbered ones of the plurality of driving circuits has an output terminal being not connected to any signal lines

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of the liquid crystal display element (See Fig. 4, item 21, pins 161-162, in Operation See Page 10, Lines 4-25).

Takahara et al does not show and ineffective display datum is a display datum for an internal circuit being connected to the output terminal.

However, Takahara et al. teaches to ignore the datum level for open pins (skip pins 161-162 by using ST1-ST12 start pulses). Since criticality of transmitting a datum having any level was not shown by the applicant, it would have been obvious to one of ordinary skill in the art at the time of invention to use any (including the same) level for transmitting ineffective datum in Takahara et al. apparatus even when the output bit number of a driver IC is larger than the circuit number of the divided electrode groups. (See in Detailed explanation of the invention Page 2, Lines 2-3).

4. Claims 7-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Takahara et al. in view of Ino et al. (US Patent No. 6,424,328 B1).

As to claims 7, 10, Takahara et al. teaches a liquid crystal display device with : a liquid crystal display element; a plurality of driving circuits (See Fig. 7, items 60, 70, in Detailed explanation of the invention See Page 3, Lines 4-20); a display control device transmitting display data for odd (even) numbered ones of the plurality of driving circuits and display data for even (odd) numbered ones alternately (See Fig. 4,7, items 21, ST1-ST12, 92, in Operation See Page 10, Lines 4-25); wherein the display control device transmits a datum having the same level as that of effective display datum for the odd (even) numbered one of the plurality of driving circuits being transmitted prior to the ineffective display datum (auxiliary terminals, in

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which other ends are opened) (See Fig. 4-5, 7, items 21, ST1-ST12, 92, in Operation See Page 11, Lines 1-25).

So, Takahara et al. teaches to ignore the datum level for open pins (skip pins 161-162 by using ST1-ST12 start pulses). Since criticality of transmitting a datum having any level was not shown by the applicant, it would have been obvious to one of ordinary skill in the art at the time of invention to use any (including the same) level for transmitting ineffective datum in Takahara et al. apparatus even when the output bit number of a driver IC is larger than the circuit number of the divided electrode groups. (See in Detailed explanation of the invention Page 2, Lines 2-3).

Modified Takahura et al. does not show the display control device device has a first storing means for storing display data for the odd numbered ones of the plurality of driving circuits which are inputted from an outside of the liquid crystal display device and second storing means for storing display data for the even numbered ones of the plurality of driving circuits which are inputted from an outside of the liquid crystal display device, reads out the display data from the first and second storing means alternately, and transmits them to plurality of driving circuits.

Ino et al. teaches memories for even and odd drivers (See Fig. 15, items 672n and 672n+1, in description See Col. 10, lines 29-430. It would have been obvious to one of ordinary skill in the art at the time of invention to use memories of Ino et al. in modified Takahara et al. apparatus in order to achieve dot inversion driving in the entire pixel area (See Col. 3, lines 39-40 in Ino et al. reference).

As to claims 8-9, 11-12, Takahara et al. teaches to ignore the datum level for open pins read out from the first or second storing means (skip pins 161-162 by using ST1-ST12 start

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pulses). Since criticality of transmitting a datum having any level was not shown by the applicant, it would have been obvious to one of ordinary skill in the art at the time of invention to use any (including the same) level for transmitting ineffective datum in Takahara et al. apparatus even when the output bit number of a driver IC is larger than the circuit number.

As to claim 13, Takahara et al. teaches display control device detects timing of the ineffective datum by counting clock signals being transmitted to plurality of the driving circuits (See Fig. 2, items 21, 26, ST3, ST4, in Means for solving the problem See Page 9, Lines 2-16).

As to claim 14, Takahara et al. teaches the at least one of the plurality of driving circuits has an output terminal being not connected to any signal lines of the liquid crystal display element (See Fig. 4, item 21, pins 161-162, in Operation See Page 10, Lines 4-25).

Takahara et al does not show and ineffective display datum is a display datum for an internal circuit being connected to the output terminal.

However, Takahara et al. teaches to ignore the datum level for open pins (skip pins 161-162 by using ST1-ST12 start pulses). Since criticality of transmitting a datum having any level was not shown by the applicant, it would have been obvious to one of ordinary skill in the art at the time of invention to use any (including the same) level for transmitting ineffective datum in Takahara et al. apparatus even when the output bit number of a driver IC is larger than the circuit number of the divided electrode groups. (See in Detailed explanation of the invention Page 2, Lines 2-3).

5. Claim 15-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Silverbrook (US Patent No. 5, 793,345 in view of Kim (US Patent 6, 348, 909 B1)).

As to claim 15, Silverbrook teaches a liquid crystal display device with : a liquid crystal display element (See Fig. 1, items 2-9, in description See Col. 2, Lines 12-16, Col. 3, Lines 25-36 and Col. 4, lines 55-67); and a display control device controlling the liquid crystal display element, wherein the display control device changes an signal input mode (See Fig. 1, items 2-9, in description See Col. 6, Lines 41-50).

Silverbrook does not show the mode changes in accordance with a number of the display timing signals inputted from an outside.

Kim show the mode changes in accordance with a number of the display timing signals inputted from an outside (See Fig. 1, items 10, 20, 30, 40, in description See Col. 4, Lines 13-32 and Col. 5, Lines 5-18). It would have been obvious to one of ordinary skill in the art at the time of invention to use Kim approach in Silverbrook apparatus in order to improve the process of dynamic refinement (See Col. 6, Line 23 in Silver brook reference).

As to claim 16, Kim teaches counting means which count external clock number in the display timing signal, discrimination means which discriminates an operation mode in accordance with the count number counted by the counting means, and mode switching means for changing signal input mode internally in accordance with the discrimination results of the discrimination means (See Fig. 1, items 10, 20, 30, 40, in description See Col. 4, Lines 13-32 and Col. 5, Lines 5-18).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

The Hirai et al. (US Patent No. 5, 874, 933) reference discloses multi-gradation liquid crystal display apparatus with dual display definition modes.

The Nakajima et al. (US Patent No. 6, 157, 358) reference discloses liquid crystal display).

The Koyama et al. (US Patent No. 6, 380, 919 B1) reference discloses electro-optical devices

The Aoki et al. (US Patent No. 6, 025, 835) reference discloses driving circuit for display apparatus with paired sample-hold ...

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 703-305-5661. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703-305-4938. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

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February 6, 2003



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